

1     **CLAIMS:**

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3     1.     A method for recovering material from waste tires, the method comprising the steps of:

- 4           (a)     contacting substantially whole waste tires with a molten reactant metal for a  
5                    reaction period;  
6           (b)     collecting process gases released from the molten reactant metal during the  
7                    reaction period;  
8           (c)     containing the waste tires on a tire carrier when the waste tires are contacted by  
9                    the molten reactant metal; and  
10          (d)     removing unreacted solids from the molten reactant metal after the reaction  
11                   period, the unreacted solids being contained on the tire carrier for removal.

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13     2.     The method of Claim 1 wherein the steps of contacting the waste tires with the molten  
14            reactant metal and containing the waste tires on the tire carrier include:

- 15           (a)     lowering the waste tires into the molten reactant metal on the tire carrier; and  
16           (b)     pressing the waste tires into the molten reactant metal with a tire contactor  
17                    member extending across an area above the tire carrier.

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19     3.     The method of Claim 2 wherein the step of removing unreacted solids from the molten  
20            reactant metal includes:

- 21           (a)     lifting the tire contactor member and the tire carrier from the molten reactant  
22                    metal and allowing the molten reactant metal to drain from around the unreacted  
23                    solids, tire contactor member, and tire carrier; and

1 (b) cooling the tire carrier and unreacted solids located on the tire carrier.

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3 4. The method of Claim 3 wherein the step of cooling the tire carrier and unreacted solids on  
4 the tire carrier comprises:

5 (a) moving the tire carrier to a cooling area and forcing air over the tire carrier and  
6 unreacted solids located on the tire carrier.

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8 5. The method of Claim 1 wherein the step of collecting process gases comprises:

9 (a) positioning a gas recovery hood in an operating position in which a lower edge  
10 thereof extends into the molten reactant metal around the area in which the waste  
11 tires are to contact the molten reactant metal, the gas recovery hood defining a gas  
12 collection area in which the process gases released from the molten reactant metal  
13 are trapped.

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15 6. The method of Claim 5 further comprising the step of:

16 (a) directing process gases trapped in the gas collection area to an aqueous scrubber  
17 and removing metal salts and carbon from the process gas with the aqueous  
18 scrubber.

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20 7. The method of Claim 5 further comprising the step of:

21 (a) purging the gas collection area of air prior to collecting substantial amounts of  
22 process gases in the gas collection area.